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(12) UK Patent Application (19) GB (11) 2 256 188 (13) A

(43) Date of A publication 02.12.1992

(21) Application No 9210324.1

(22) Date of filing 14.05.1992

(30) Priority data
(31) 4117094 (32) 25.05.1991 (33) DE

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(51) INT CL[5]
B41F 13/06

(52) UK CL (Edition K)
B8R RRP R8M

(56) Documents cited
None

(58) Field of search
UK CL (Edition K) B8R RRC RRP RRW9
INT CL[5] B41F 13/06, B65H 23/32

(54) Turning bar for turning over fed webs

(57) A compressed-air-fed turning bar 10 for turning over a printed web 23 is displaceably disposed on cross-members (not shown). The circumference of the turning bar is provided with axial rows of air-outlet openings 11. Pistons 14 are moved by rotary, hollow actuating spindles (not shown) which provide air ducts for delivering compressed air to the central part of the bar between the pistons. Air-outlet openings 22 are provided on the outer cylindrical surface of the pistons in axial rows (19, 20 and 21) of different length. By adjusting the position of the pistons, the openings 11 supplied with air can be matched with the extent of the web on the bar.

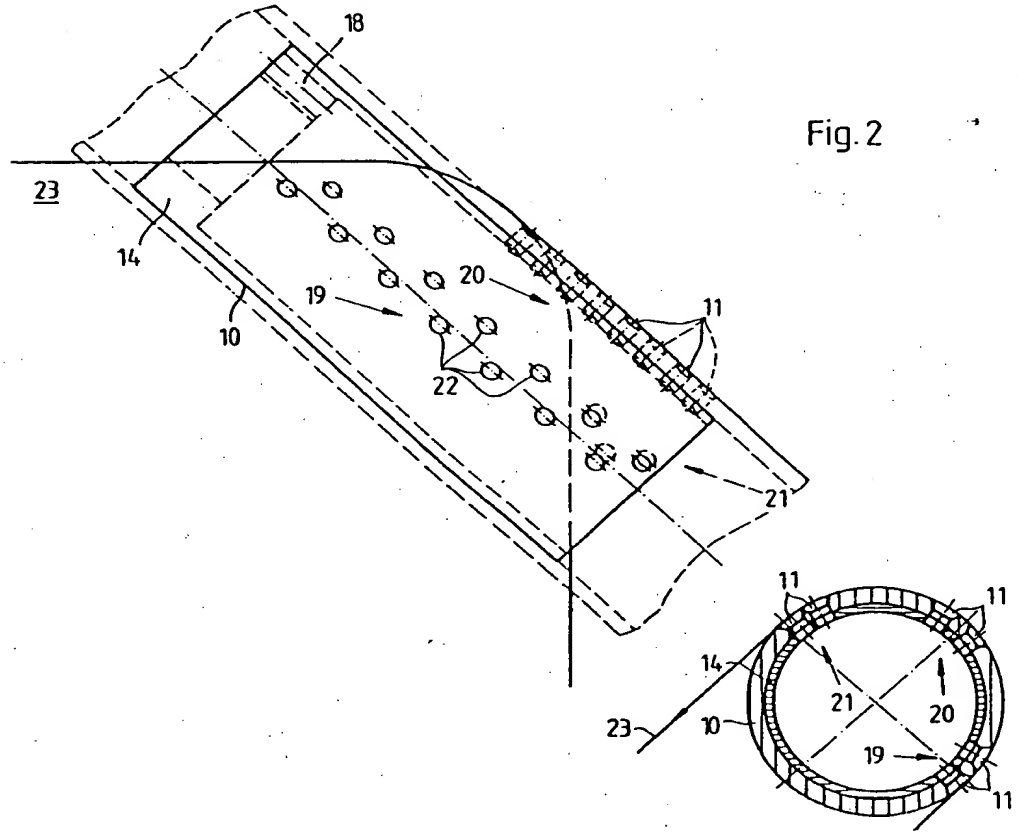

Fig. 2

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Fig.1

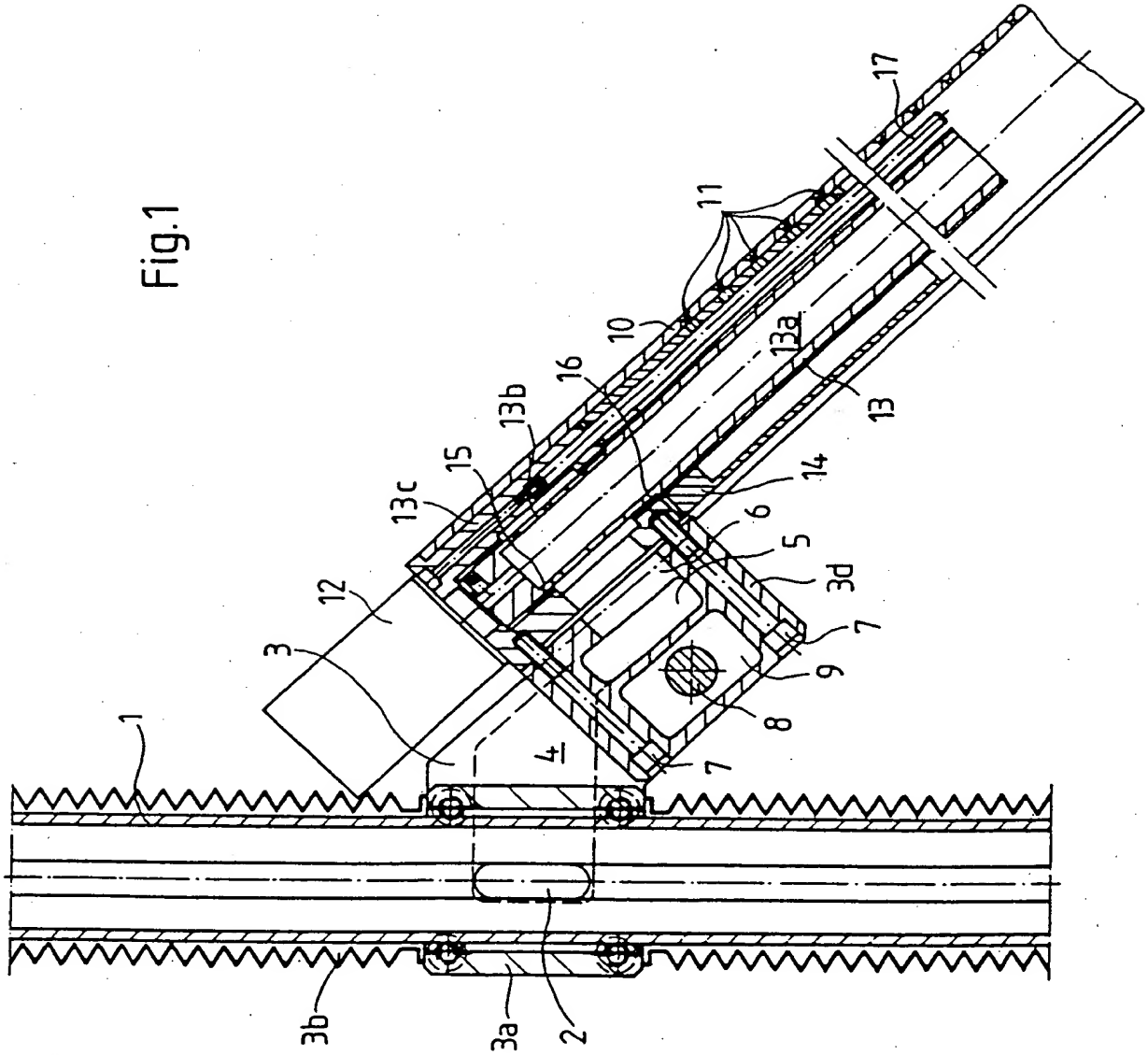


Fig.3a

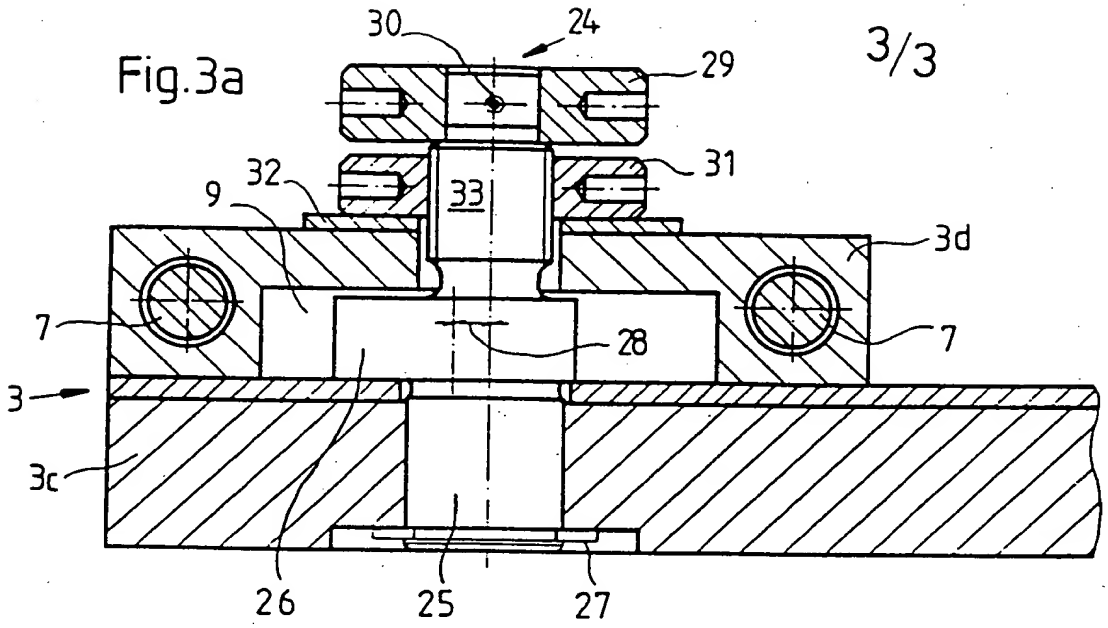
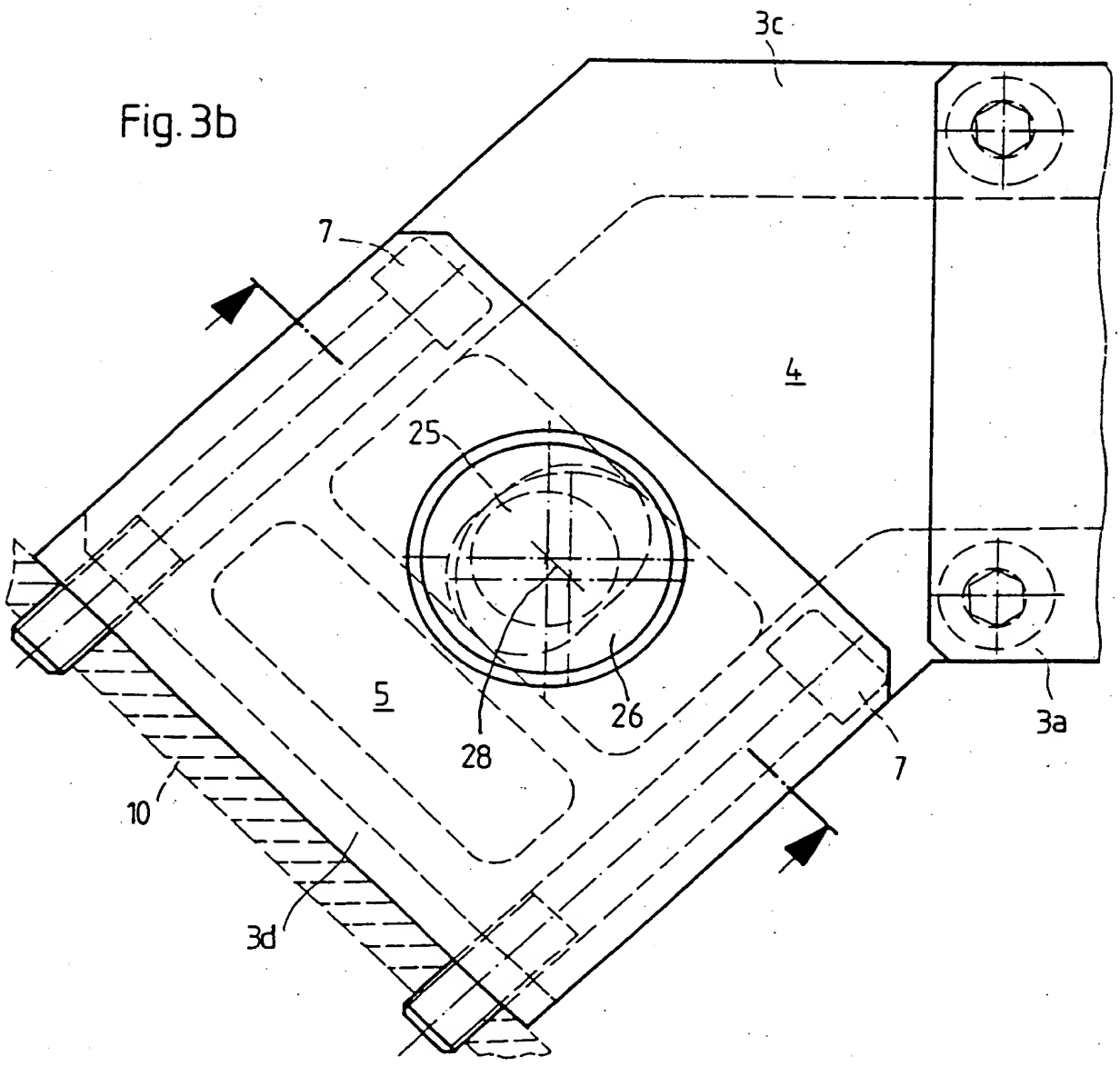


Fig.3b



Compressed-air-fed turning bar

The invention relates to a compressed-air-fed turning bar for turning over webs of material in rotary printing presses.

DE-PS 34 36 870 discloses an air-jacketed turning bar for rotary printing presses. Said turning bar bears, on a profile, two pistons, said pistons each comprising a sheath-shaped shoulder whose outer end face is bevelled according to the running of the paper-web edge guided around on the outside of the turning bar. For displacing the pistons in the turning bar there are two threaded spindles, which are lockable in the turning bar.
The turning bar, which is held in fixed manner through the intermediary of a bracket, is additionally energized with compressed air through the intermediary of said bracket. Consequently, the turning bar can be adjusted only by rotating the internal structural units. The piston-guiding threaded spindles are adjusted manually by means of knurled screws; in order to operate said knurled screws, the printers must climb into the superstructure. The sheath-shaped shoulders, made from an isosceles triangle, are difficult to fit into the turning bar, because, for reasons of maximum possible sealing, their outside diameter must be the same as the inside diameter of the turning bar with a slight undersize.

Furthermore, lower-cost manufacture of the pistons is possible.

A further development of the basic idea behind the invention provides that the rows of air-outlet openings on the outer cylindrical surface of the piston are laterally offset with respect to one another, according to the edges of a web of material surrounding the turning bar.
This guarantees precise air metering, particularly in the edge regions of the web of material.

A special embodiment of the invention provides that the actuating spindles are driven by electric motors, said electric motors having a potentiometer for feedback of the position.
This makes it possible, when there is a change of job, to incorporate the control of the turning bar as part of the presetting. It is possible, on a job-specific basis, to store turning-bar positions that have been found to be satisfactory. For the next comparable printing job, said turning-bar positions are automatically moved to as part of the presetting.

A further embodiment of the invention provides that the compressed air is supplied into the interior of the turning bar through a closed duct system of approximately identical cross-sectional area.
This permits a streamlined supply of the compressed air, because flow resistances are extensively minimized in order to guarantee minimum possible loss in the transport of the compressed air and in order to prevent leaks. The duct system dispenses with the need for interfering systems of lines outside of the cross-

position in sectional and top-view representations.

Fig. 1 shows how one end of a turning bar is held on a cross-member and shows the interior of a turning-bar end including the compressed-air supply. A compressed-air-conducting cross-member 1, held in a turning-bar superstructure (not to be explained in any greater detail here), comprises a duct through which the compressed air flows into a bearing body 3 through an outlet opening 2. The bearing body 3 runs through a sliding piece 3a on the cross-member 1, on which sliding piece 3a is provided a bellows 3b for sealing. The bearing body 3 is further provided with a bearing plate 3c and an actuating lug 3d. The compressed air is supplied from the outlet opening 2 to a cavity 4, from where it passes into an air chamber 5. From the air chamber 5, the air flows through an opening 6 into an actuating-spindle bearing 13c. The compressed air enters, through a bore 13b in an actuating spindle 13, into an air duct 13a provided in the actuating spindle 13. In the region of the centre of a turning bar 10, the compressed air escapes from the opening of the air duct 13a and enters into the cavity of the turning bar 10. Situated opposite the actuating spindle 13 shown here is a similar actuating spindle 13 at the end of the turning bar not shown here.

The actuating lug 3d of the bearing body 3 is screwed by two retaining screws 7 to the actuating-spindle bearing 13c, which is disposed inside a turning bar 10. Air-outlet openings 11 are provided in rows on the circumferential surface of the turning bar 10. An electric motor 12, which has a potentiometer, is connected to the actuating spindle 13 and sets the

two air-outlet openings 22 of the row 19 lying closest to the edge of the web of material 23. The air-outlet openings 11 of the turning bar 10 corresponding to the row 19 of the piston 14 are situated precisely above the air-outlet openings 22 shown here (see sectional representation). If one follows the progress of the web of material 23 along the circumference of the turning bar 10, then the web of material 23 meets with air-outlet openings 11 provided in the turning bar 10, of which air-outlet openings 11 a number extending as far as the edge of the web of material 23 is opened by a row 20 formed on the piston 14. The rows 19, 20 and 21 of air-outlet openings 22 on the piston 14 and the rows of air-outlet openings 11 on the circumference of the turning bar 11 are offset with respect to one another by 90°.

In the example shown here, the row 21 opposite the row 19 on the piston 14 consists of three air-outlet openings 22, which are shown here by a broken line. Consequently, the edge of the turned-over web of material 23 is subjected to compressed air, with the result that deposition on the circumference of the turning bar 10 is not possible.

All air-outlet openings 11 of the turning bar 10 lying between the pistons 14 are, of course, energized with compressed air. The use of electric motors 12 at the two opposite ends of the turning bar 10 also makes it possible to move just one piston 14 in the turning bar 10. This makes it possible to limit the air cushion to specific regions of encirclement on the turning bar 10. The air-outlet openings 11 and 22 may be in the form of holes or also in the form of slits or may also have a different geometry.

Providing the electric motors 12 with potentiometers makes it possible to indicate at the printing-press

Also, if there is a change in humidity or a change to the setting parameters of cooling rollers or driers, it may be necessary to adjust the position of the turning bar. Firstly, the actuating element 29 can be operated finely and delicately by experienced printers, while, secondly, it is also conceivable, there too, to provide an electric-motor drive, with which there may be a feedback of the position. It is also possible to employ pneumatic cylinders or electromagnets. In order to transmit the rotational movement of the actuating element 29 to the eccentric shaft 25, the actuating element 29 is non-rotatably disposed on the eccentric shaft 25 by means of a pin 30. The thread 33 provided on the eccentric shaft 25 serves to apply the preload between clamping nut 31 and a washer 32 at one end against the snap ring 27 - i.e. between actuating lug 3d and bearing plate 3c of the bearing body 3.

It will be appreciated that the invention has been described above by way of example only and that changes may be made without departing from the scope of the invention.

the turning bar.

7. Compressed-air-fed turning bar according to claim 6, in which the fine-adjusting device comprises an eccentric shaft by means of which an eccentric, movable in a chamber, displaces an actuating lug with respect to a bearing plate.

8. Compressed-air-fed turning bar substantially as described with reference to the drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

Application number

9210324.1

Relevant Technical fields

(i) UK Cl (Edition K) B8R (RRP, RRW9, RRC)

(ii) Int Cl (Edition 5) B65H 23/32, B41F 13/06

Search Examiner

E W BANNISTER

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

22 JULY 1992

Documents considered relevant following a search in respect of claims 1-8

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

14.12.1992 *PW/AR/E*

Familie von GB OS 2256188

Titel:
Druckluftgespeiste Wendestange Zur Umlenkung Von Warenbahnen In Rotationsdruckmaschinen

Anmelder:
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Erfinder:
Dieter Hambrecht

Prio.-Daten:	Schrift:	S/P	IPC:	Umlauf:	Üb.:
25-MAY-91 4117094 DE	DE OS 4117094	1	B41F13/06	iU	--
	GB OS 2256188	2	B41F13/06	iU	--

1 = Stammschrift / 2 = Parallelschrift